

Claims:

- 1 1. A data structure, comprising:
2 a plurality of data frames temporally separated by respective inter-packet gaps
3 (IPGs), each IPG having positioned within it at least a synchronization pattern suitable for
4 delineating a respective data frame.
- 1 2. The data structure of claim 1, wherein a length indicative data element is positioned
2 within said IPG, each length indicative data element storing a length parameter associated
3 with a data frame adjacent said IPG.
- 1 3. The data structure of claim 2, wherein said length indicative data element comprises
2 a count of a number of double words within said adjacent data frame.
- 1 4. The data structure of claim 2, wherein said length indicative data element comprises
2 a count of a number of words within said adjacent data frame.
- 1 5. The data structure of claim 1, wherein a cyclical redundancy check (CRC) data
2 element is positioned within each IPG, said CRC data element storing a CRC generated
3 using a data frame adjacent said IPG.
- 1 6. The data structure of claim 5, wherein said adjacent data frame is scrambled using a
2 polynomial which is relatively prime with a CRC generator polynomial used to generate
3 said respective CRC indicative data element.
- 1 7. The data structure of claim 1, wherein said data frame is scrambled using a
2 polynomial.

1 8. The data structure of claim 7, wherein said scrambled data frame and the contents of
2 said adjacent IPG are scrambled.

1 9. The data structure of claim 1, wherein a pointer data element is positioned within
2 said IPG, said pointer data element indicating the position of a next data frame.

1 10. A protocol suitable for delineating data frames within a communications link, said
2 protocol comprising a plurality of layers including a physical coding sublayer (PCS), said
3 PCS processing a data to be transmitted as a sequence of data frames, said protocol
4 comprising:

5 receiving a data stream to be transmitted as a sequence of data frames;
6 inserting, into a temporal region following each transmitted data frame, a
7 synchronization pattern suitable for delineating said data frame.

1 11. The protocol of claim 10, further comprising:
2 inserting, into said temporal region following each transmitted data frame, a cyclical
3 redundancy check (CRC) data element generated using the contents of said data frame.

1 12. The protocol of claim 11, further comprising:
2 inserting, into said temporal region following each transmitted data frame, a length
3 indicative data element generated according to the contents of a respective data frame.

1 13. The protocol of claim 10, further comprising:
2 scrambling said received data included within said sequence of data frames; and
3 determining whether said scrambled data include a data pattern that may be
4 interpreted as being equivalent to said synchronization pattern; and
5 in the case of finding such a matching data pattern, inserting an error message into
6 said data frame being formed.

1 14. The protocol of claim 13, wherein said scrambling is performed using a polynomial
2 which is relatively prime with a CRC generator polynomial used to generate a CRC
3 indicative data element, said CRC indicative data element being inserted into a temporal
4 region following said data frame from which said CRC was generated.

1 15. A method for transmitting data, comprising:
2 transmitting, to a physical media dependent (PMD) layer, a sequence of idle control
3 characters;
4 transmitting, to said PMD layer, a start of frame delineator (SFD) upon detecting
5 the presence of data to be transmitted;
6 transmitting said received data until an entire data frame has been transmitted;
7 transmitting, upon the transmission of said entire data frame, an end of frame
8 delineator (EFD) and a termination flag (T-FLAG), said T-FLAG comprising a relatively
9 long synchronization pattern selected to be substantially unique.

1 16. The method of claim 15, further comprising:
2 scrambling said data forming said data frame.

1 17. The method of claim 16, further comprising:
2 scrambling said scrambled data, said SFD, said EFD and said T-FLAG.

1 18. The method of claim 15, further comprising:
2 transmitting, to said PMD layer, an error flag (E-FLAG) upon detecting an
3 arrangement of data within said data frame substantially equivalent to said T-FLAG
4 synchronization pattern.

1 19. The method of claim 15, further comprising the step of:

2 transmitting, upon the transmission of said entire data frame, a pointer indicative of
3 the position of a next data frame to be transmitted.

1 20. A method for receiving data, comprising:
2 determining data frame delineation points within a received data stream by detecting
3 the presence of a synchronization pattern within said data stream, said synchronization
4 pattern being positioned within inter-packet gaps (IPGs); and
5 forming data frames for subsequent processing by utilizing said determined
6 delineation points.

1 21. The method of claim 20, wherein said detection of said synchronization pattern
2 comprises a correlation of data within said data stream to at least an n-bit difference
3 between said synchronization pattern and said reference synchronization pattern.

1 22. The method of claim 21, further comprising:
2 discarding all data pertaining to a data frame being formed in response to the
3 detection of an error flag within said input data stream.

1 23. The method of claim 20, further comprising:
2 identifying a cyclical redundancy check (CRC) data element proximate said T-FLAG
3 and within a respective IPG; and
4 utilizing said detected CRC and a CRC generated using a corresponding formed data
5 frame to determine whether said formed data frame has been corrupted.

1 24. The method of claim 20, further comprising:
2 detecting a length indicative data element proximate said T-FLAG and within a
3 respective IPG; and
4 determining whether said received data frame has a length proximate the length

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5 indicated by said length detected length indicative data element.

1 25. The method of claim 20, further comprising:

2 detecting a pointer within said data stream proximate said T-FLAG, said pointer

3 identifying a start position of a next data frame; and

4 determining whether a gap within said data stream exists indicative of the corruption

5 of a T-FLAG prior to the reception of said data stream.

1 26. The method of claim 20, wherein said data stream is received from a physical media

2 dependent (PMD) layer and said formed data frames are provided to a media access control

3 (MAC) interface layer.

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